

WHAT IS CLAIMED IS:

1. A method of manufacturing a continuous foam from a thermoplastic elastomeric composite in atmosphere, comprising the steps of:
 - using a thermoplastic elastomer as a raw material;
 - 5 adding different additive, foaming agent, and crosslinking agent into the raw material;
 - kneading and rolling the raw material for forming a continuous sheet by means of conventional rubber continuous foaming techniques and devices;
 - cutting the continuous sheet and weighing the sheet to an oven;
 - 10 foaming the heated sheet in a normal pressure; and
 - cooling the foamed sheet to produce the continuous foam.
2. The method of claim 1, wherein the thermoplastic elastomer as the raw material is selected from a styrenic thermoplastic elastomer including a styrene butadiene styrene (SBS), a styrene-ethylene/butene-styrene (SEBS),
15 a styrene isoprene styrene (SIS), and a styrene ethylene propylene styrene (SEPS) having a percentage about 50% to 100% of the total weight of the raw material.
3. The method of claim 2, wherein the thermoplastic elastomer further comprises polymeric materials including styrene butadiene rubber (SBR),
20 polystyrene (PS), ethylene vinyl acetate (EVA), low density polyethylene (LDPE), and ethylene-propylene-diene terpolymer rubber (EPDM) having a percentage about 0% to 50% of the total weight of the raw material.
4. The method of claim 2, wherein components of the thermoplastic elastomeric composite in a predetermined weight percentage are poured into
25 the conventional devices for uniformly mixing by kneading and rolling in a temperature ranged from about 90°C to 130°C.
5. The method of claim 4, wherein the continuous sheet is baked in the oven

in a temperature ranged from about 150°C to 180°C in a normal pressure for a predetermined period of time for foaming the continuous sheet to produce a foam material.

6. The method of claim 2, wherein the foaming agent is selected from a chemical foaming agent (e.g., azodicarbonamide) or a physical foaming agent including sodium bicarbonate having a percentage about 1% to 15% of the total weight of the raw material.

7. The method of claim 6, wherein the crossling agent is selected from a dicumyl peroxide, 2,5-(tert-butylperoxide)-2,5-dimethylhexane or sulfur having a percentage about 0.1% to 1% of the total weight of the raw material.

8. The method of claim 7, wherein the thermoplastic elastomer further comprises accelerators for foaming agent selected from a zinc oxide or urea having a percentage about 0% to 3% of the total weight of the raw material.

9. The method of claim 7, wherein the thermoplastic elastomer further comprises a processing agent selected from stearate or hard zinc based stearate.

10. The method of claim 7, wherein the thermoplastic elastomer further comprises an additive including a coloring agent, a calcium carbonate, and wood chips.

11. The method of claim 7, wherein the thermoplastic elastomer further comprises a functional additive selected from an anti-static agent, a flame retardation agent, or a reinforced agent having a percentage about 0.1% to 50% of the total weight of the raw material.

12. A method of manufacturing a continuous foam from a thermoplastic elastomeric composite in atmosphere, comprising the steps of:

using a thermoplastic elastomer as a raw material;

adding different additive, foaming agent, and crosslinking agent into the

raw material;

kneading and rolling above materials for forming a continuous sheet by means of conventional rubber continuous foaming techniques and devices;

cutting the continuous sheet into a plurality of sheet members with a
5 predetermined size;

stacking a selected weight of the sheet members depending on requirements;

cutting the selected weight of the sheet members to a mold to heat for forming a blank;

10 cutting the blank to an oven to foam in a normal pressure; and

cooling the foamed blank to produce a foam material having a predetermined shape.

13. The method of claim 12, wherein the thermoplastic elastomer as the raw material is selected from a styrenic thermoplastic elastomer including styrene
15 butadiene styrene (SBS), styrene-ethylene/butene-styrene (SEBS), styrene isoprene styrene (SIS), or styrene ethylene propylene styrene (SEPS) having a percentage about 50% to 100% of the total weight of the raw material.

14. The method of claim 13, wherein the components of the thermoplastic elastomeric composite in a predetermined weight percentage are poured into
20 the conventional devices for uniformly mixing by kneading and rolling in a temperature ranged from about 90°C to 130°C.

15. The method of claim 14, wherein responsive to uniformly mixing the components of the thermoplastic elastomeric composite, the uniformly mixed components of the thermoplastic elastomeric composite are transported to a
25 two-roll mill for rolling a predetermined number of times to form a continuous sheet with required thickness prior to cutting into a plurality of sheet members with the predetermined size by means of an automatic cutter.

16. The method of claim 15, further comprising the steps of:
stacking a selected weight of sheet members having a required weight;
and
cutting the selected weight of sheet members to the mold to heat in a
5 temperature ranged from about 150°C to 180°C in a pressure about 90 to 250
kg/cm²,
wherein the blank is formed after heating a predetermined period of time.
17. The method of claim 12, wherein the foaming agent is selected from a
chemical foaming agent (e.g., azodicarbonamide) or a physical foaming agent
10 including sodium bicarbonate having a percentage about 1% to about 15% of
the total weight of the raw material.
18. The method of claim 17, wherein the crosslinking agent is selected from a
dicumyl peroxide, 2,5-(tert-butylperoxide)-2,5-dimethylhexane or sulfur having
a percentage about 0.1% to 1% of the total weight of the raw material.
- 15 19. The method of claim 18, wherein the thermoplastic elastomer composite
further comprises polymeric materials including styrene butadiene rubber
(SBR), polystyrene (PS), ethylene vinyl acetate (EVA), low density
polyethylene (LDPE), and ethylene-propylene-diene terpolymer rubber (EPDM)
having a percentage about 0% to 50% of the total weight of the raw material.
- 20 20. The method of claim 18, wherein the thermoplastic elastomer composite
further comprises a accelerator for foaming agent selected from a zinc oxide
or urea having a percentage about 0% to 3% of the total weight of the raw
material.
21. The method of claim 18, wherein the thermoplastic elastomer composite
25 further comprises a processing agent selected from stearate or stearate.
22. The method of claim 18, wherein the thermoplastic elastomer composite
further comprises an additive including a coloring agent, a calcium carbonate,

and wood chips.

23. The method of claim 18, wherein the thermoplastic elastomer composite further comprises an functional additive selected from an anti-static agent, a flame retardation agent, or a reinforced agent having a percentage about 0%
5 to 50% of the total weight of the raw material.